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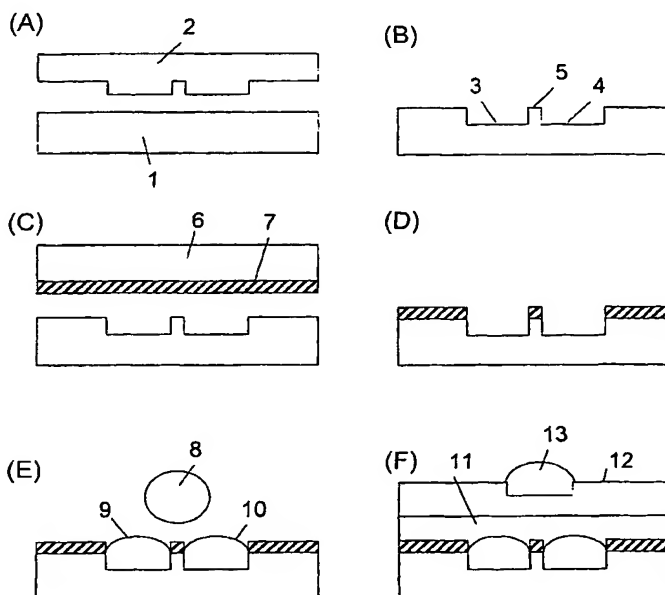
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[Continued on next page]

(54) Title: ELECTRONIC DEVICES



(57) Abstract: A method for forming an electronic device having a multilayer structure, comprising: embossing a surface of a substrate so as to depress first and second regions of the substrate relative to at least a third region of the substrate; depositing conductive or semiconductive material from solution onto the first and second regions of the substrate so as to form a first electrode on the first region and a second electrode on the second region, wherein the electrodes are electrically insulated from each other by the third region.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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# INTERNATIONAL SEARCH REPORT

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L51/20 H01L51/40

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/47183 A (KURZ HEINRICH ; BERND ADOLF (DE); HARING PETER (DE); SIEMENS AG (DE);) 13 June 2002 (2002-06-13)	1-4,6,7, 12,14, 22,23, 27,36, 37,40-47
Y	abstract; figure 1	5,8,15, 17-19
Y	SIRRINGHAUS H ET AL: "HIGH-RESOLUTION INK-JET PRINTING OF ALL-POLYMER TRANSISTOR CIRCUITS" MRS BULLETIN, PITTSBURGH, US, vol. 26, no. 7, July 2001 (2001-07), pages 539-543, XP001032496	5,15
A	the whole document	27,28, 30-33, 38,39

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

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# INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/29912 A (SMITH PAUL ; EIDGENOESS TECH HOCHSCHULE (CH); SIRRINGHAUS HENNING (GB)) 11 April 2002 (2002-04-11) cited in the application	1
Y	the whole document	8
Y	----- KAGAN C R ET AL: "PATTERNING ORGANIC-INORGANIC THIN-FILM TRANSISTORS USING MICROCONTACT PRINTED TEMPLATES" APPLIED PHYSICS LETTERS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 79, no. 21, 19 November 2001 (2001-11-19), pages 3536-3538, XP001061204 ISSN: 0003-6951 the whole document	17-19
A	----- MARTIN-GALLARDO A ET AL: "EXPRESSION OF THE F GLYCOPROTEIN GENE FROM HUMAN RESPIRATORY SYNCYTIAL VIRUS IN ESCHERICHIA COLI: MAPPING OF A FUSION INHIBITINGEPI TOPE" VIROLOGY, XX, XX, vol. 184, no. 1, 1991, pages 428-432, XP001021001 the whole document	
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB 03/05430

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-47

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

## 1. claims: 1-47

Method of forming an electronic device by embossing the surface of the substrate and depositing conducting material in the recesses so as to form (source and drain) electrodes. The prior art (W00247183) describes the formation of source and drain electrodes by embossing the surface of the substrate and depositing conducting material in the recesses so as to form (source and drain) electrodes.

The new features are a further step after embossing and prior deposition of conductive material, comprising the treatment of the raised part of the surface with a surface modifying agent.

The objective problem is to avoid the deposition of conductive material on raised parts of the surface.

The special technical features as defined in rule 13(2) PCT are the treatment of the raised part of the surface with a surface modifying agent.

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## 2. claims: 48-70

A method for forming a transistor comprising: depositing a conductive layer onto a substrate and embossing the substrate such that the a portion of the conductive layer is pushed into the substrate.

The prior art (W00247183) describes the formation of source and drain electrodes by embossing the surface of the substrate and depositing conducting material in the recesses so as to form (source and drain) electrodes.

The new features are the deposition of a conductive layer onto a substrate and embossing the substrate such that the a portion of the conductive layer is pushed into the substrate.

The objective problem is to provide a conductive layer on the raised and recessed portions of the surface that are electrically isolated.

The special technical features as defined in rule 13(2) PCT are the deposition of a conductive layer onto a substrate and embossing the substrate such that the a portion of the conductive layer is pushed into the substrate.

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## 3. claims: 71-98

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A method for solution deposition comprising the steps of: depositing polymer layers onto a surface of a substrate, embossing the polymer layer(s) and etching the polymer layer(s) to form a polymer mask on the substrate; using the mask for selective deposition of (conductive) material. The prior art (W00247183) describes the formation of source and drain electrodes by embossing the surface of the substrate and depositing conducting material in the recesses so as to form (source and drain) electrodes. The new features are the deposition of polymer layers onto a substrate, embossing the upper polymer layer and etching the lower polymer layer (using the upper embossed layer as a mask) to form a polymer mask layer on the substrate; using the mask for selective deposition of (conductive) material. The objective problem is to form a deposition mask on a substrate. The special technical features as defined in rule 13(2) PCT are the formation of a deposition mask on a substrate.

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## 4. claims: 99-122

A method for forming an electrode of a multi-layer electronic device by defining a topographic feature on a surface of a first layer of the device and deposition of a conductive material onto the topographic feature. The prior art (W00247183) describes the formation of source and drain electrodes by embossing the surface of the substrate and depositing conducting material in the recesses so as to form (source and drain) electrodes. The new features are a method for forming a gate electrode by defining a topographic feature on a surface of the device and deposition of a conductive material onto the topographic feature. The objective problem is to form a gate electrode. The special technical features as defined in rule 13(2) PCT are the formation of a gate electrode by defining a topographic feature on a surface of the device and deposition of a conductive material onto the topographic feature.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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			WO 0247183 A1	13-06-2002
			EP 1346422 A1	24-09-2003
			JP 2004515928 T	27-05-2004
			US 2004063267 A1	01-04-2004
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			EP 1323196 A1	02-07-2003
			WO 0229912 A1	11-04-2002
			JP 2004517737 T	17-06-2004
			TW 582067 B	01-04-2004
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